



Attorney's Docket No.: 14083-002001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Roger Proksch et al.      Art Unit : 2862  
Serial No.: 10/016,475      Examiner : Jay M. Patidar  
Filed : November 30, 2001  
Title : LINEAR VARIABLE DIFFERENTIAL TRANSFORMERS WITH  
IMPROVED MEASUREMENT CAPABILITIES (AS AMENDED)

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**Mail Stop Appeal Brief - Patents**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

BRIEF ON APPEAL

Applicant herewith files this Brief on Appeal, thus perfecting the Notice of Appeal which was originally filed on December 12, 2003. The headings and sections required by 37 CFR 1.192 follow:

**(1) Real Party in Interest**

The application is assigned to Asylum Research Corporation, who is hence the real party in interest.

**(2) Related Appeals and Interferences**

There are no known related appeals and/or interferences.

**CERTIFICATE OF MAILING BY FIRST CLASS MAIL**

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**(3) Status of Claims**

Claims 1-60 are pending in the case. Claims 4-60 are withdrawn from consideration (and now cancelled), leaving only claims 1-3 as pending.

**(4) Status of Amendments**

An amendment after final was filed on October 10, 2003. In an Advisory Action dated November 14, 2003, it was indicated that the amendment would be entered. However, certain claims were objected to based on constructive election. The issue of constructive election is not questioned here.

**(5) Summary of Invention**

The present disclosure describes a special kind of linear variable differential transformer, which has special features that enable improved accuracy. A linear variable differential transformer or LVDT is commercially available, and Figure 1 as well as the first paragraph on page 4, describes the use of a LVDT. These devices are used for sensing high precision measurements. Therefore, the limits on resolution of such a device can be extremely important.

In analyzing these limitations, the inventor found that certain kinds of noise can limit the resolution of a conventional LVDT; see original specification page 4, paragraph

3, lines 2-4. Having found that, the inventors describe a number of schemes to reduce Barkhausen noise and other kinds of electrical noise in conventional LVDT's, see page 5, first full paragraph, lines 1-3.

Page 8, last paragraph, lines 5-10 describe avoiding these problems by winding the coil around a nonferromagnetic coil form 10. It has been found that while this lowers certain kinds of sensitivity, there is an overall gain that increases the sensitivity of the resultant system (see the top of page 9 of the specification). By doing this, the sensitivity is increased, and the electronic circuitry that is attached to the displacement transducer can produce a signal that can be responsive to microns or less of movement. See for example page 15, second paragraph, last line.

Nothing in the prior art in any way teaches or suggests such a feature.

**(6) Issues**

There is only one issue for review, and namely, are claims 1-3 properly rejected under 35 USC 102(b) as being anticipated by Neff.

**(7) Grouping of Claims**

Claims 2 and 3 rise and fall with claim 1.

(8) Argument

All of claims 1-3 stand rejected under 35 USC 102 as allegedly being anticipated by Neff. For reasons set forth herein, it is respectfully suggested that Neff neither discloses or even suggests anything about the subject matter that is claimed.

In rejecting the claims, the rejection states that Neff teaches the basic displacement apparatus, and also states that Neff discloses a coil form in its Figure 1, and an electronic voltmeter that generates a signal responsive to relative displacements.

I. Neff does not teach or suggest the claim limitation of claim 1 that the windings on the stationary form are "in the absence of any ferromagnetic element inductively coupling windings".

*Never argued.*  
Neff teaches a system with longitudinal movement arranged pickup coils 3 and 4, and the driving coil 5. It appears that the coils 3 and 4 are stationary, and that the driving coil 5 moves relative to those coils. Admittedly, Neff teaches that an air core 8 may be substituted for the iron core in the moving coil. However, Neff teaches nothing about using an air core for winding the fixed coil. Therefore, nowhere is there any

*Not claimed.*

Not  
claimed.

teaching or suggestion in Neff of the important subject matter of claim 1, and specifically that the windings are magnetically coupled "in the absence of any ferromagnetic element inductively coupling the windings. Quite simply, there is no teaching or suggestion that the stationary core is wound without ferromagnetic materials.

II. Neff does not teach that "the electronic circuitry generates a signal responsive to relative displacements between the core forms in the range of microns or less".

Neff does disclose an electronic voltmeter used to determine the movement of one coil relative to the other. Nowhere, however, is there any teaching or suggestion that this circuitry generates a signal responsive to relative displacements between the forms on the range of microns or less. In fact, common sense would dictate that a vacuum tube oscillator would not have been sufficiently precise to allow relative displacements of that precision to be obtained.

It is well-established that anticipation of a claim requires that each and every claim element be shown in the prior art. However, there is absolutely no teaching or suggestion that the electronic circuitry could be responsive to a range of microns or less. Neff would not be expected to be responsive to such

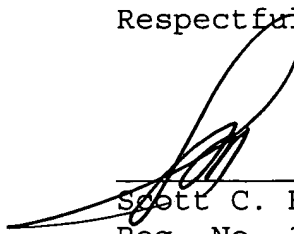
small amounts of movement between the coil forms. In fact, Neff teaches nothing about any special formation or special techniques which would enable that kind of precision. Neff, therefore, clearly does not disclose that the resolution would be microns or less and, therefore, does not disclose each and every limitation of the claims. Therefore, clearly this does not meet the Patent Office's burden of providing a prima facie showing of unpatentability.

To summarize the above, it is clear that the prior art does not show or suggest each and every one of the limitations defined by the claims, and therefore claim 1 should be allowable over the prior art along with claims 2 and 3 which depend therefrom.

The brief fee of \$165 is enclosed. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: March 12, 2004

  
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Appendix: Claims on Appeal  
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### Appendix of Claims

1. A displacement transducer comprising:

first and second non-ferromagnetic coil forms with a common axis, each wound with at least one winding;

the outside diameter of the first form with its winding or windings being smaller than the inside diameter of the second form so that each may be displaced relative to the other with the first form inside the second form;

one of the coil forms being movable and the other coil form being stationary;

the winding or windings on the movable form magnetically coupled to the winding or windings on the stationary form (in the absence of any ferromagnetic element) inductively coupling the windings; and

electronic circuitry generating a signal responsive to relative displacements between the coil forms in the range of microns or less.

2. The transducer of claim 1, in which the sensor comprises;

the coil form with the smaller outside diameter wound with two or more windings and the other coil form wound with a single winding.

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3. The transducer of claim 1, in which the sensor  
comprises;

the coil form with the larger inside diameter wound with  
two or more windings and the other coil form wound with a single  
winding.